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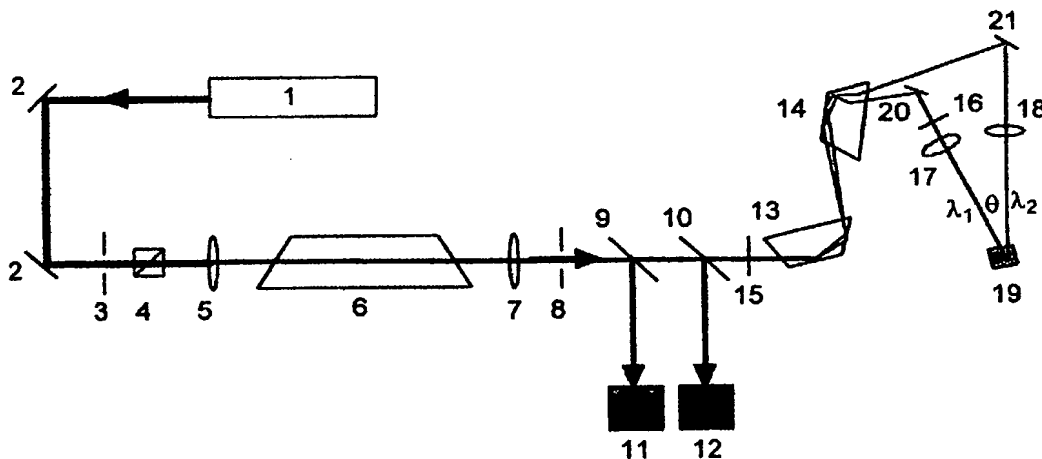
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(54) Title: TWO-COLOR (TWO-PHOTON) EXCITATION WITH FOCUSED EXCITATION BEAMS AND A RAMAN SHIFTER



(57) Abstract: Two-color (two-photon) excitation with two confocal excitation beams is demonstrated with a Raman shifter as excitation light source. Two-color excitation fluorescence is obtained from Coumarin 6H dye sample (peak absorption = 394 nm, peak fluorescence = 490 nm) that is excited using the first two Stokes outputs (683 nm, 954 nm, two-color excitation = 398 nm) of a Raman shifter pumped by a 6.5 nsec pulsed 532 nm-Nd:YAG laser (Repetition rate = 10 Hz). The two Stokes pulses overlap for a few nanoseconds and two-color fluorescence is generated even with focusing objectives of low numerical apertures ( $NA \leq 0.4$ ). We observed the linear dependence of the two-color fluorescence signal with the product of the average intensities of the two Stokes excitation beams. The two-color fluorescence distribution is strongly localized around the common focus of the confocal excitation beams.

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